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## (54) System and method for color characterization and transformation

(57) A system and method for color characterization and transformation obtain color data representing output of a color imaging system (56; 58), and convert the color data using a color space having a white reference vector (60) that is adjusted during the conversion. The white reference vector can be adjusted according to intensities of the color data being converted. Adjustment of the white reference vector serves to avoid non-uniformities for color imaging systems having different imaging bases, and thereby eliminates, or at least reduces, the amount of empirical adjustment necessary to obtain an acceptable visual match between the color imaging systems.

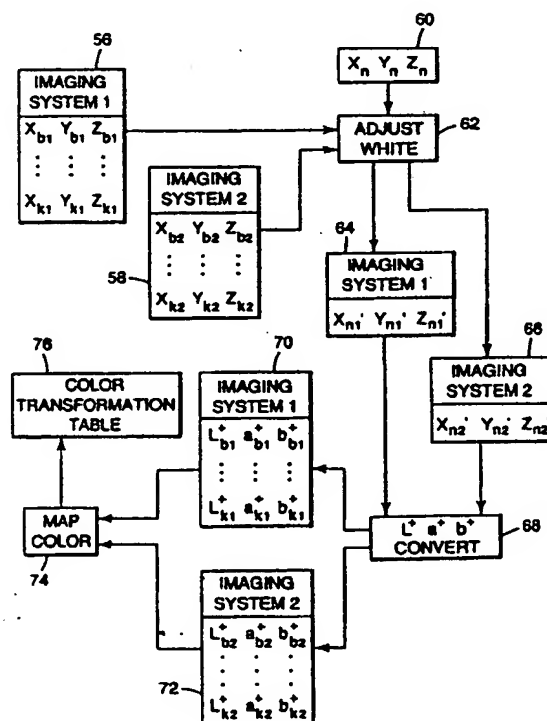


FIG. 4



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EP 96 11 0832

| DOCUMENTS CONSIDERED TO BE RELEVANT   |   |  |  |
|---|---|--|--|
| Category  | Citation of document with indication, where appropriate, of relevant passages   | Relevant to claims   | CLASSIFICATION OF THE APPLICATION (Int.Cl.6) |
| Y   | APPLIED OPTICS,<br>vol. 29, no. 34, 1 December 1990, NEW YORK<br>US,<br>pages 5187-5192, XP000165701<br>S. SUZUKI ET AL.: "COLOR CHARACTERISTIC<br>DESIGN FOR COLOR SCANNERS"<br>* the whole document *                 | 1  | G01J3/46                                     |
| A   | ---   | 2,6  |  |
| Y   | US 4 965 663 A (T. SASAKI)<br>* abstract *<br>* column 1, line 12 - column 3, line 36 *<br>* column 7, line 53 - column 9, line 38;<br>figures 7,8 *  | 1  |  |
| A   | ---   | 2,6  |  |
| A   | US 5 149 960 A (B. DUNNE ET AL.)<br>* column 1, line 61 - column 4, line 9;<br>figures 1,4,6,7 *  | 1,2,6  |  |
| A   | ---   | 1,2,6  | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.6)      |
| A   | GB 2 117 902 A (LOGE-INTERPRETATION<br>SYSTEMS INC.)<br>* abstract *<br>* page 1, line 67 - page 2, line 120 *<br>* page 4, line 1 - line 102; figures 2,6 *  | 1,2,6  | G01J<br>H04N                                 |
| A   | IEEE TRANSACTIONS ON BROADCASTING,<br>vol. 38, no. 2, June 1992, NEW YORK US,<br>pages 90-97, XP000309542<br>P.-R. CHANG ET AL.: "A COLOR CONSTANCY<br>MODEL FOR ADVANCED TELEVISION CAMERAS"<br>* the whole document * | 1,2,6  |  |
|   | ---   |  |  |
|   | -/--  |  |  |
| The present search report has been drawn up for all claims  |   |  |  |
| Place of search<br><b>THE HAGUE</b>   |   | Date of completion of the search<br><b>31 January 1997</b> | Examiner<br><b>Horak, G</b>                  |
| <b>CATEGORY OF CITED DOCUMENTS</b><br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |   |  |  |



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|--|---|---|--|
| Category   | Citation of document with indication, where appropriate, of relevant passages   | Relevant to claim                                   | CLASSIFICATION OF THE APPLICATION (Int.Cl.6) |
| A  | 10TH INT. CONF. ON PATTERN RECOGNITION,<br>vol. I, 16 June 1990, ATLANTIC CITY,<br>N.J., USA,<br>pages 803-807, XP000166419<br>S. TOMINAGA: "A COLOR CLASSIFICATION<br>METHOD FOR COLOR IMAGES USING A UNIFORM<br>COLOR SPACE"<br>* the whole document *<br>----- | 1,2,6   |  |
|  |   |   | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.6)      |
|  |   |   |  |
| The present search report has been drawn up for all claims   |   |   |  |
| Place of search<br>THE HAGUE   |   | Date of completion of the search<br>31 January 1997 | Examiner<br>Horak, G                         |
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